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CONT'D

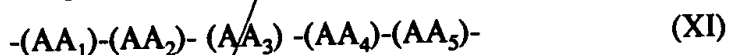
- E₁-Ser- (IV)
- E₁-Gln-E₂- (V)
- Gln-E₂- (VI)
- E₁-Gln- (VII)
- E₁-Asn-E₂- (VIII)
- Asn-E₂- (IX)
- and
- E₁-Asn- (X)

wherein:

-E₁ represents a peptide sequence of 0 to 9 amino acids
and

-E₂ represents a peptide sequence of 0 to 5 amino acids,

-Θ represents a peptide sequence of formula (XI):



wherein:

(AA₁) is selected from the group consisting of a lysine residue, an arginine residue, and an ornithine residue,

(AA₂) is selected from the group consisting of a glycine residue, and an asparagine residue,

(AA₃) is selected from the group consisting of a lysine residue, an arginine residue, and an ornithine residue,

(AA₄) is selected from the group consisting of a leucine residue, an alanine residue, an isoleucine residue, and a glutamine residue,

(AA₅) is selected from the group consisting of an isoleucine residue, a valine residue, a leucine residue, a threonine residue, a norleucine residue, and a norvaline residue,

provided, however, that (AA₁), (AA₂), (AA₃), (AA₄) and (AA₅) never form together the peptide sequences -Lys Gly Lys Leu Ile- and -Lys Gly Lys Leu Val-,

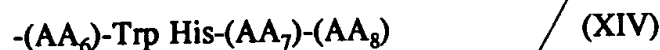
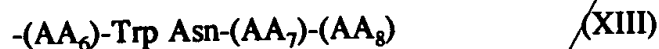
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$-\Omega_1$ attached to the $-\text{CO}-$ group of serine, is selected from the group consisting of:

- a hydroxyl ($-\text{OH}$) radical, an amino ($-\text{NH}_2$) radical,
- an alkoxy radical comprising from 1 to 6 carbon atoms,
- a peptide sequence of formula (XII) :



wherein Σ represents a sequence selected from the group consisting of sequences of formula (XIII) and formula (XIV):



wherein:

(AA_6) represents an amino acid different from lysine,

(AA_7) represents an amino acid,

(AA_8) is selected from the group consisting of a serine and a threonine residue,

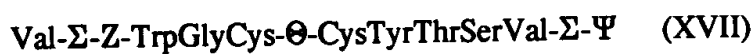
and Ψ , attached to the $-\text{CO}-$ residue of the free AA_8 amino acid, is selected from the group consisting of an OH group, a NH_2 group and an alkoxy radical comprising from 1 to 6 carbon atoms,

-a peptide sequence of formula (XV):



wherein Ψ , attached to the $-\text{CO}-$ residue of valine, has the same meaning as for the formula (XII),

- and a peptide sequence selected from the group consisting of sequences of formula (XVI) to (XVIII):



wherein Z and Θ have the definition given for the formula (I)

and Σ has the definition given for the formula (XII) and Ψ ,

attached to the -CO- residue of serine, on the -CO- residue of the AA₈ amino acid or on the -CO- residue of valine, has the same meaning as for the formula (XII).

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16. Synthetic peptides of formula (I) according to claim 15 wherein Δ represents an aliphatic chain, said aliphatic chain being selected from the group consisting of an alkyl chain of 1 to 6 carbon atoms, an alkenyl chain of 2 to 6 carbon atoms, and an aminoalkylcarbonyl chain of 2 to 6 carbon atoms.

17. Synthetic peptides of formula (I) according to claim 15, wherein (AA₅) is selected from the group consisting of a valine residue, a leucine residue, and a threonine residue and when Ω corresponds to a peptide sequence of formula (XII) or (XIV), (AA₆) is selected from the group consisting of a glutamine residue and an arginine residue.

18. Synthetic peptides of formula (I), according to claim 15, wherein:

- Δ is selected from the group consisting of a biotinyl radical, a hydrogen atom, an aliphatic chain which may contain one or two thiol, an aldehyde functional group and an amine functional group,

-Z represents a peptide sequence of formula (II) or (V), wherein Ξ_1 represents a peptide sequence of two amino acids and Ξ_2 represents an amino acid, or a sequence of formula (IV), wherein Ξ_1 represents three amino acids, or a peptide sequence of formula (VIII), wherein Ξ_1 represents a peptide sequence of nine, eight or three amino acids and Ξ_2 a peptide sequence of five amino acids,

- Θ is selected from the group consisting of peptide sequences of formulae:

-Lys Gly Arg Leu Val-,

-Arg Gly Lys Ala Val-,

- Arg Gly Arg Leu Val-, and

-Arg Gly Arg Ala Val-,

and

- Ω is selected from the group consisting of a hydroxyl group, the peptide sequence (XV) and one of the following sequences representing the peptide sequence of formula (XII):

- Val Arg Trp Asn Glu Thr- Ψ ,
- Val Gln Trp Asn Glu Thr- Ψ and
- Val Gln Trp Asn Ser Thr- Ψ .

19. Synthetic peptides of formula (I), according to claim 15, wherein Z is selected from the group consisting of peptide sequences of formulae:

- Leu Leu Ser Ser-
- Leu Leu Asn Ser-
- Arg Leu Asn Ser-
- Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asn Ser-
- Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asp Leu-
- Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asn Ile-
- Leu Asn Gln Gln Arg Leu Leu Asn Ser-

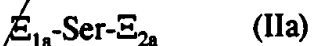
and

- Arg Ala Leu Glu Thr Leu Leu Asn Gln Gln Arg Leu Leu Asn Ser-

20. Synthetic peptides of 20 to 50 amino acids according to claim 15, of formula (Ia):



wherein Z_a is selected from the group consisting of radicals of formulae IIa to Xa:



-Gln- Ξ_{2a} (VIa)
 Ξ_{1a} -Gln- (VIIa)
 Ξ_{1a} -Asn- Ξ_{2a} (VIIIa)
 -Asn- Ξ_{2a} (IXa)
 - Ξ_{1a} -Asn (Xa)

wherein:

- Ξ_{1a} represents a peptide sequence of 1 to 5 amino acids

and

- Ξ_{2a} an amino acid,

- Ω_a represents a peptide sequence of formula (XII), as defined for the formula (I), or a peptide sequence of formula (XVIIa):

Val- Σ -Z_a-TrpGlyCys- Θ -CysTyrThrSerVal- Σ - Ψ (XVIIa)

and

Δ , Θ , Σ and Ψ have the same meaning as for the formula (I).

21. Synthetic peptides of formula (I) according to claim 15 including one of the following sequences:

Sequence No. 1

-LLSLWGCRGKAVCYTSVOWNET-

or

-Leu Leu Ser Leu Trp Gly Cys Arg Gly Lys Ala Val Cys Tyr Thr Ser Val Gln Trp Asn

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Glu Thr-

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Sequence No. 2

-LLSLWGCRGRLVCYTSVQWNET-

or

-Leu Leu Ser Leu Trp Gly Cys Arg Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Glu Thr-

22

Sequence No. 3

-LLSSWGCKGRLVCYTSVQWNET-

or

-Leu Leu Ser Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Glu Thr-

22

Sequence No. 4

-LLSSWGCKGRLVCYTSVQWNST-

or

-Leu Leu Ser Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Ser Thr-

22

Sequence No. 5

-LLQSWGCKGRLVCYTSVQWNST-

or

-Leu Leu Gln Ser Trp Gly Cys Lys Gly Arg Leu alV Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Ser Thr-

22

Sequence No. 6

-LLNSWGCRGKAVCYTSVQWNET-

or

-Leu Leu Asn Ser Trp Gly Cys Arg Gly Lys Ala Val Cys Tyr Thr Ser Val Gln Trp Asn

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Glu Thr-

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Sequence No. 7

-LLSLWGCRGRAVCYTSVQWNET-

or

-Leu Leu Ser Leu Trp Gly Cys Arg Gly Arg Ala Val Cys Tyr Thr Ser Val Gln Trp Asn

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Glu Thr-

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Sequence No. 8

-LLSSWGCRGRLVCYTSVQWNET-

or

-Leu Leu Ser Ser Trp Gly Cys Arg Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

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Glu Thr-

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Sequence No. 9:

-LLSSWGCKGRLVCYTS-

or

-Leu Leu Ser Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser-

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Sequence No. 10:

-LLNSWGCKGRLVCYTS-

or

-Leu Leu Asn Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser-
1 5 10 15

Sequence No. 11:

-ALETLLQNQQLLNSWGCRGRLVCYTSVRWNET-

or

-Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asn Ser Trp Gly Cys Arg Gly
1 5 10 15
Arg Leu Val Cys Tyr Thr Ser Val Arg Trp Asn Glu Thr-
20 25 30

Sequence No. 12:

-ALETLLQNQQLLNIWGCRGRLVCYTSVRWNET-

or

-Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asn Ile Trp Gly Cys Arg Gly
1 5 10 15
Arg Leu Val Cys Tyr Thr Ser Val Arg Trp Asn Glu Thr-
20 25 30

Sequence No. 13:

-ALETLLQNQQLLDLWGCRGRLVCYTSVRWNET-

or

-Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asp Leu Trp Gly Cys Arg Gly
1 5 10 15
Arg Leu Val Cys Tyr Thr Ser Val Arg Trp Asn Glu Thr-
20 25 30

Sequence No. 14:

-LNQQRLLNSWGCKGRLVCYTSV-

or

-Leu Asn Gln Gln Arg Leu Leu Asn Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr

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Thr Ser Val-

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Sequence No. 15:

-RALETLLNQQRLLNSWGCKGRLVCYTSV-

or

- Arg Ala Leu Glu Thr Leu Leu Asn Gln Gln Arg Leu Leu Asn Ser Trp Gly Cys Lys

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Gly Arg Leu Val Cys Tyr Thr Ser Val-

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Sequence No. 16:

-RLNSWGCKGRLVCYTSV-

or

- Arg Leu Asn Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser Val-

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22. Synthetic peptides, according to claim 15, of sequence:

PEPTIDE No. 1 (2B)

LLSLWGCRGKAVCYTSVQWNET

or

Leu Leu Ser Leu Trp Gly Cys Arg Gly Lys Ala Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Glu Thr

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PEPTIDE No. 2 (3B)

LLSLWGCRGRLVCYTSVQWNET

or

Leu Leu Ser Leu Trp Gly Cys Arg Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Glu Thr

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PEPTIDE No. 3 (4B)

LLSSWGCKGRLVCYTSVQWNET

or

Leu Leu Ser Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Glu Thr

22

PEPTIDE No. 4 (5B)

LLSSWGCKGRLVCYTSVQWNST

or

Leu Leu Ser Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Ser Thr

22

PEPTIDE No. 5 (6B)

LLQSWGCKGRLVCYTSVQWNST

or

Leu Leu Gln Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Ser Thr

22

PEPTIDE No. 6

LLNSWGCRGKAVCYTSVQWNET

or

Leu Leu Asn Ser Trp Gly Cys Arg Gly Lys Ala Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Glu Thr

22

PEPTIDE No. 7

LLSLWGCRGRAVCYTSVQWNET

or

Leu Leu Ser Leu Trp Gly Cys Arg Gly Arg Ala Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Glu Thr

22

PEPTIDE No. 8 (7B)

LLSSWGCRGRLVCYTSVQWNET

or

Leu Leu Ser Ser Trp Gly Cys Arg Gly Arg Leu Val Cys Tyr Thr Ser Val Gln Trp Asn

1 5 10 15 20

Glu Thr

22

PEPTIDE No. 9 (12B)

LLSSWGCKGRLVCYTS

or

Leu Leu Ser Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser
1 5 10 15

PEPTIDE No. 10 (14B)

LLNSWGCKGRLVCYTS

or

Leu Leu Asn Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser
1 5 10 15

PEPTIDE No. 11 (18B)

ALETLLQNQQLLNSWGCRGRLVCYTSSVRWNET

or

Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asn Ser Trp Gly Cys Arg Gly
1 5 10 15
Arg Leu Val Cys Tyr Thr Ser Val Arg Trp Asn Glu Thr
20 25 30

PEPTIDE NO. 12 (19B)

ALETLLQNQQLLNIWGCRGRLVCYTSSVRWNET

or

Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asn Ile Trp Gly Cys Arg Gly
1 5 10 15
Arg Leu Val Cys Tyr Thr Ser Val Arg Trp Asn Glu Thr
20 25 30

PEPTIDE No. 13 (20B)

ALETLLQNQQLLDLWGCRGRLVCYTSVRWNET

or

-Ala Leu Glu Thr Leu Leu Gln Asn Gln Gln Leu Leu Asp Leu Trp Gly Cys Arg Gly

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Arg Leu Val Cys Tyr Thr Ser Val Arg Trp Asn Glu Thr

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PEPTIDE No. 14 (21B)

LNQQRLLNSWGCKGRLVCYTSV

or

Leu Asn Gln Gln Arg Leu Leu Asn Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr

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Thr Ser Val

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PEPTIDE No. 15 (22B)

RALETLLNQQRLLNSWGCKGRLVCYTSV

or

Arg Ala Leu Glu Thr Leu Leu Asn Gln Gln Arg Leu Leu Asn Ser Trp Gly Cys Lys

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Gly Arg Leu Val Cys Tyr Thr Ser Val

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PEPTIDE No. 16 (23B)

RLNSWGCKGRLVCYTSV

or

Arg Leu Asn Ser Trp Gly Cys Lys Gly Arg Leu Val Cys Tyr Thr Ser Val

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23. Composition containing at least one synthetic peptide of formula (I) according to claim 15.

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24. Composition according to claim 21 containing peptide No. 3 (4B) and peptide No. 1 (2B).

25. Composition containing at least one synthetic peptide of formula (I) according to claim 15 and at least one group O HIV-1 recombinant peptides.

26. Composition containing at least one synthetic peptide of formula (I), according to claim 15, and at least one HIV-1 and/or HIV-2 recombinant or synthetic peptide.

27. Immunoassay method comprising the steps of:

- 1) contacting at least one synthetic peptide of formula (I) according to claim 15, previously detectably labelled, with a sample likely to contain antibodies directed to said peptides;
- 2) detecting the presence of a complex between said peptides and said antibodies;
- 3) optionally assaying the amount of said antibodies in the sample.

28. Immunoassay method comprising the steps of:

- 1) contacting a composition according to claim 23, containing at least one synthetic peptide of formula (I), previously detectably labelled, with a sample likely to contain antibodies directed to said peptides;
- 2) detecting the presence of a complex between said peptides and said antibodies;
- 3) optionally assaying the amount of said antibodies in the sample.

29. Diagnostic kit including at least one synthetic peptide of formula (I), according to claim 15.

30. Diagnostic kit including a composition according to claim 23.